	Α	В	С	D	E	F	G	Н	1	J	K	L		
1				Backgrou	nd Statistic	s for Data	Sets with	Non-Dete	cts					
2	U	ser Selected	d Options											
3	Date/T	Date/Time of Computation 9/22/2014 12:36:35 F												
4	_		rom File	WorkShee	et.xls									
5		Full P	recision	OFF										
6	Co	nfidence Co		95%										
7			overage	95%										
	rent or Fut	ture K Obse		1										
8		ootstrap Ope		2000										
9	Tibel of bi	Joistiap Opi	erations	2000										
10	Aroclors													
11	Arociors													
12														
13							Statistics							
14					servations	44			Number of	Missing Obse	ervations	0		
15		N	lumber of	Distinct Ob		37		25						
16					of Detects	19		Number of Non-Detects						
17			Numb	per of Distir	nct Detects	18		Number of Distinct Non-Detects						
18				Minim	num Detect			Minimum Non-Detect						
19				Maxim	num Detect	20.45				Maximum No	n-Detect	5.2		
20				Variance	e Detected	17.2		Percent Non-Detects						
21				Mea	n Detected	9.097				SD I	Detected	4.147		
22			Mean of D	Detected Lo	gged Data	2.127		SD of Detected Logged Data						
23														
24				Critical	Values for	Backgrou	nd Thresh	nold Values	s (BTVs)					
25			Tolerand		(For UTL)				• •	d2max ((for USL)	2.906		
26					, ,						, ,			
27					Norma	I GOF Tes	t on Detec	cts Only						
28	_		Shar	oiro Wilk Te	est Statistic		Shapiro Wilk GOF Test							
29					itical Value	0.901	Data Not Normal at 5% Significance Level							
30					est Statistic			Lilliefors GOF Test						
31					itical Value			Data Not			nce Level			
32	_	5% Lilliefors Critical Value 0.203 Data Not Normal at 5% Significance Level Data Not Normal at 5% Significance Level												
					Data Hoti	10111141 41 4	,, C. G.g.i.i.i.	Junio 2011						
33			Kan	lan Meier ((KM) Backo	round Sta	tietice Aec	umina No	rmal Dietril	hution				
34			Тар	iaii ivicici (Mean		dodoo 7 too	Julining 1401	mai Disan	- Julion	SD	4.684		
35		95% UTL95% Coverage				-				05% KN	Л UPL (t)	12.63		
36										95% KM Perc		12.37		
37		90% KM Percentile (z) 99% KM Percentile (z)									KM USL	18.28		
38				73 70 KIVI F C	rceriue (2)	15.57				95 /6	KINI OOL	10.20		
39														
40			DI	/2 Substitut	tion Books	round Stati	istics Assi	umina Nor	mal Dietrib	ution				
41	1		DL	/2 Substitu	tion Backg		stics Assı	uming Nor	mal Distrib	ution	en.			
					Mean	4.552	stics Assı	uming Nori	mal Distrib		SD (ALIDIA (A)	4.834		
42				% UTL95%	Mean Coverage	4.552 14.66	stics Assı	uming Nor	mal Distrib	95%	6 UPL (t)	12.77		
42 43				% UTL95% 90% Pe	Mean Coverage rcentile (z)	4.552 14.66 10.75	stics Ass	uming Nor	mal Distrib	95% 95% Perc	6 UPL (t) entile (z)	12.77 12.5		
42 43 44		BI 6	95	% UTL95% 90% Pe 99% Pe	Mean Coverage rcentile (z)	4.552 14.66 10.75 15.8				95% 95% Perc	6 UPL (t) entile (z) 95% USL	12.77		
42 43 44 45		DL/2	95	% UTL95% 90% Pe 99% Pe	Mean Coverage rcentile (z)	4.552 14.66 10.75 15.8				95% 95% Perc	6 UPL (t) entile (z) 95% USL	12.77 12.5		
42 43 44 45 46		DL/2	95	% UTL95% 90% Pe 99% Pe recommen	Mean Coverage rcentile (z) rcentile (z) ded metho	4.552 14.66 10.75 15.8 d. DL/2 pro	ovided for	compariso	ons and his	95% 95% Perc	6 UPL (t) entile (z) 95% USL	12.77 12.5		
42 43 44 45 46 47		DL/2	95	% UTL95% 90% Pe 99% Pe recommen	Mean of Coverage ercentile (z) ercentile (z) ded metho	4.552 14.66 10.75 15.8 d. DL/2 pro	ovided for	compariso	ons and his	95% 95% Perc 9 storical reaso	6 UPL (t) entile (z) 95% USL	12.77 12.5		
42 43 44 45 46 47 48		DL/2	95' 2 is not a l	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805	ovided for etected Ol	comparisons eservations	ons and his s Only derson-Da	95% 95% Perc 9 storical reaso	6 UPL (t) entile (z) 95% USL ons	12.77 12.5 18.6		
42 43 44 45 46 47 48 49		DL/2	95' 2 is not a l	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742	ovided for etected Ol	comparisons pservations An Not Gamn	ons and his s Only derson-Da na Distribu	95% Perc 9storical reaso arling GOF Te	6 UPL (t) entile (z) 95% USL ns est nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr K-S Te	Mean o Coverage orcentile (z) orcentile (z) ded metho est Statistic itical Value est Statistic	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212	etected OI	comparisons Disservations An Not Gamn	ons and his s Only derson-Da na Distribu olmogrov-	95% Perc 95% Perc 9 storical reaso arling GOF Te ted at 5% Sig Smirnoff GOI	entile (z) 95% USL ns est nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr K-S Te 5% K-S Cr	Mean Coverage Incentile (z) In	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199	ovided for etected Ol Data	comparisons Servations An Not Gamn K Not Gamn	ons and his s Only derson-Da na Distribu olmogrov- na Distribu	95% Perc 9storical reaso arling GOF Te	entile (z) 95% USL ns est nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50 51		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr K-S Te 5% K-S Cr	Mean o Coverage orcentile (z) orcentile (z) ded metho est Statistic itical Value est Statistic	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199	ovided for etected Ol Data	comparisons Servations An Not Gamn K Not Gamn	ons and his s Only derson-Da na Distribu olmogrov- na Distribu	95% Perc 95% Perc 9 storical reaso arling GOF Te ted at 5% Sig Smirnoff GOI	entile (z) 95% USL ns est nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr K-S Te 5% K-S Cr	Mean Coverage Arcentile (z) Ar	4.552 14.66 10.75 15.8 d. DL/2 pro 0.805 0.742 0.212 0.199 a Distributo	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level	95% Perc 95% Perc 9 storical reaso arling GOF Te ted at 5% Sig Smirnoff GOI	entile (z) 95% USL ns est nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50 51		DU2	95°	% UTL95% 90% Pe 99% Pe recommen Gam A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value est Statistic itical Value Not Gamma	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199 a Distribute	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level	95% 95% Perc 9 storical reaso urling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	entile (z) 95% USL ns est nificance F	12.77 12.5 18.6 Level		
42 43 44 45 46 47 48 49 50 51 52		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value est Statistic itical Value Not Gamm Gamma S hat (MLE)	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	s Only derson-Da na Distribu olmogrov- na Distribu e Level	95% Perc 95torical reaso arling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	entile (z) 95% USL ns est nificance F nificance	12.77 12.5 18.6		
42 43 44 45 46 47 48 49 50 51 52 53 54		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value est Statistic itical Value Not Gamma	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	s Only derson-Da na Distribu olmogrov- na Distribu e Level	95% 95% Perc 9 storical reaso urling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	entile (z) 95% USL ns est nificance F nificance	12.77 12.5 18.6 Level		
42 43 44 45 46 47 48 49 50 51 52 53 54 55		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value est Statistic itical Value Not Gamm Gamma S hat (MLE)	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level / k star	95% Perc 95torical reaso arling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	entile (z) 95% USL 95% USL 95% Inificance F Inificance ted MLE)	12.77 12.5 18.6 Level		
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage Arcentile (z) Ar	4.552 14.66 10.75 15.8 d. DL/2 pro 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357 1.431	Data Data Data and at 5% \$	comparisons Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level / k star	95% Perc 95torical reaso arling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	entile (z) 95% USL 95% USL 95% Inificance F Inificance ted MLE)	12.77 12.5 18.6 Level Level 5.388 1.688		
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage Ircentile (z) Ir	4.552 14.66 10.75 15.8 d. DL/2 pro 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357 1.431 241.6	Data Data Data and at 5% \$	comparison Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level / k star	95% Perc 95torical reaso arling GOF Te ted at 5% Sig Smirnoff GOI ted at 5% Sig	de UPL (t) entile (z) 95% USL ens est enificance fed MLE) ted MLE) orrected)	12.77 12.5 18.6 Level Level 5.388 1.688		
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage Ircentile (z) Ir	4.552 14.66 10.75 15.8 d. DL/2 pro 0.805 0.742 0.212 0.199 a Distribute tatistics or 6.357 1.431 241.6 9.097	Data Data Data and at 5% \$	comparison Servations An Not Gamn K Not Gamn Significance	ons and his s Only derson-Da na Distribu olmogrov- na Distribu e Level / k star	95% Perc. 95torical reaso entling GOF Teted at 5% Sig Smirnoff GOI ted at 5% Sig (bias correct (bias correct u star (bias correct	de UPL (t) entile (z) 95% USL ens est enificance fed MLE) ted MLE) orrected)	12.77 12.5 18.6 Level Level 5.388 1.688 204.7		
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60		DL/2	95°	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage Ircentile (z) Ir	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.199 a Distributo tatistics or 6.357 1.431 241.6 9.097 3.919	Data Data Data Data Data Data Data	comparisons Servations An Not Gamn K Not Gamn Significance	s Only derson-Da na Distribu olmogrov- na Distribu e Level k star Theta star n	95% Perc. 95torical reaso entling GOF Teted at 5% Sig Smirnoff GOI ted at 5% Sig (bias correct (bias correct u star (bias correct	de UPL (t) entile (z) 95% USL ens est enificance fed MLE) ted MLE) orrected)	12.77 12.5 18.6 Level Level 5.388 1.688 204.7		
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59			95° 2 is not a	% UTL95% 90% Pe 99% Pe recommen A-D Te 5% A-D Cr K-S Te 5% K-S Cr Data I	Mean Coverage recentile (z) recentile (z) ded metho ma GOF T est Statistic itical Value est Statistic itical Value Not Gamm Gamma S hat (MLE) hat (MLE) corrected) corrected)	4.552 14.66 10.75 15.8 d. DL/2 pro ests on De 0.805 0.742 0.212 0.199 a Distributo tatistics or 6.357 1.431 241.6 9.097 3.919	Data Data Data Date Detected Data Data Data Data Data Data Data	comparisons Servations An Not Gamn K Not Gamn Significance I Data Only	s Only derson-Da na Distribu olmogrov- na Distribu e Level k star Theta star n	95% Perc. 95torical reaso entling GOF Teted at 5% Sig Smirnoff GOI ted at 5% Sig (bias correct (bias correct u star (bias correct	de UPL (t) entile (z) 95% USL ens est enificance F enificance ted MLE) ted MLE) orrected) uare (2k)	12.77 12.5 18.6 Level Level 5.388 1.688 204.7		

	Α	В		С	D	Е	F	G	Н		J	K	L	
63					•	ot be used w								
64	For such situations, GROS method tends to yield inflated values of UCLs and BTVs													
65	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
66	Minimum					0.01	Mean					4.051		
67	Maximum SD					20.45 5.212	Median					0.706		
68	K hat (MLE)					0.264	CV					0.261		
69	K hat (MLE) Theta hat (MLE)					15.36	k star (bias corrected MLE) Theta star (bias corrected MLE)					15.52		
70 71	nu hat (MLE)					23.21				•		22.96		
72	MLE Mean (bias corrected)					4.051	nu star (bias corrected) MLE Sd (bias corrected)					7.93		
73	95% Percentile of Chisquare (2k)					2.494	90% Percentile					12.12		
74	95% Percentile						19.36	99% Percentile					38.51	
75	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
76				Upper	Limits us	ing Wilson I	Hilferty (W	H) and Hav	wkins Wixl	ey (HW) N	lethods			
77						WH	HW					WH	HW	
78	Approx. G	iamma L	JTL				33.79		95%	Approx. G	amma UPL	18.01	21.14	
79				95% Ga	amma US	L 51.14	77.55							
80														
81					-	stics are co	-							
82				Upper	Limits us	ing Wilson I		H) and Hav	WKINS WIXI	ey (HW) N		. l+ (IZNA)	07.40	
83						k hat (KM)	0.994 HW				n	u hat (KM) WH	87.48 HW	
84	Approx. G	amma I	ITI	with 95%	Coverag		17.68		95%	Annroy G	amma UPL	13.3	13.56	
85	дрргох. С	iaiiiiia C) I L		amma US		29.25		95 /0 /	Арргох. Са	allilla OF L	13.3	13.30	
86 87				30 % GC	arriirid 00	20.01	20.20							
88					Logi	normal GOF	Test on D	etected Ol	servation	s Only				
89	Shapiro Wilk Test Statistic					0.92	Shapiro Wilk GOF Test							
90	5% Shapiro Wilk Critical Value					0.901	Detected Data appear Lognormal at 5% Significance							
91	Lilliefors Test Statistic					0.186								
92	=2(1)111 (2)11 11(1)						0.203	5						
93					Detect	ed Data app	ear Logno	rmal at 5%	Significar	nce Level				
94														
95		Backg	roui			Statistics /		Lognormal	Distribution	on Using Ir			4 400	
96						5.492					Log Scale	1.486 0.634		
97					4.174 16.64			05% BC		Log Scale	19.41			
98					19.81	95% BCA UTL95% Coverage 95% UPL (t)					12.99			
99 100	000/ D :: /)				9.959	95% Percentile (z)					12.54			
101	2001 5 ()					19.31					95% USL	27.9		
102														
103			Si	tatistics u	ısing KM	estimates o	n Logged I	Data and A	ssuming L	.ognormal	Distribution	n		
104						ogged Data	1.069				ormal)95%		21.56	
105						ogged Data	0.957				KM UPL (L	-	14.83	
106						14.07	95% KM USL (Lognormal)					47.06		
107														
108						und DL/2 S		suming Lo	gnormal D	istribution			222	
109				N		iginal Scale	4.552					Log Scale	0.937	
110						4.834	SD in Log Scale					1.111		
111						26.03					5% UPL (t)	16.86		
112					10.59 33.81				95% Pe	rcentile (z) 95% USL	15.86 64.37			
113		וח	1/2:	e not e 🖺		ercentile (z) nded Metho		ovided for	comparies	ne and his	torical reco		04.37	
114		וט	<u></u>	o not a P		idea Melilo	ч. <i>о</i> о с ріс	AIGGU IUI	oompan 180	no ana mb	NOTICAL IEAS	,U113.		
115					Nonr	arametric D	istribution	Free Rack	around St	atistics				
116 117				Data		o follow a D					Level			
118														
119		No	onp	arametric	Upper L	imits for BT	Vs(no disti	nction mad	le betweei	n detects a	and nondet	ects)		
120						of Statistic, r	44				ΓL with95%		20.45	
121					Aı	proximate f	2.316	Coi	nfidence C	oefficient (CC) achiev	ed by UTL	0.895	
122						95% UPL	15.56					95% USL	20.45	
123				95%	KM Che	yshev UPL	25.32							
124														
	_												_	

	Α	В	С	D	Е	F	G	Н	I	J	K	L
125	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
125 126	data set free of outliers and consists of observations collected from clean unimpacted locations.											
127		The use of USL tends to provide a balance between false positives and false negatives provided the data										
128 129		represents a background data set and when many onsite observations need to be compared with the BTV.										
129												